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Abstract

End-user experience with information presumably considered as one of the prominent factors shaping the adoption of web-based electronic services. User interfacing with large amount of information the rationale is to deduce the effect in the current web-based task environment. Understanding user's perception on the basis of the prior experience with information may provide insights into what constitutes in driving those perceptions and their effect in the current and future task in web-based electronic services. The paper lays the theoretical context of end-user experience with information and proceeds further in an attempt to distinguish the role in web-based electronic services.

Keywords

Web-based electronic services, end-user experience, user's information experience.

1. Introduction

End-user information experience in web-based electronic services is an important area that is gradually growing with introduction and adoption of web-based technology. The information available to e-service users may be one of the determinants which direct the user in achieving the desired objectives that form the purpose of using e-service. An airline passenger using e-service to book a ticket has specific information requirement, an interest that may be in availability of ticket, arrival or departure time, or in some other e-service. The information requirements may be based from prior experience in similar or related task. Information search form the initial need in the activity to achieve the desired objectives, and hence the acquisition of information experience

process. Information if not available to individual users in online or offline environments directs the user in adopting the search process based on experience.

Web-based user services are generally perceived as being successful, but there has been little evaluation of how well the web meets its user's' primary information requirements (D'Ambra and Rice 2000). The freedom and flexibility offered by the Internet allow user's to connect to other websites of their interest and at the same time build upon their information experience on the web. A number of researchers suggested that flow is a useful construct for describing interactions with computers (Csikszentmihalyi, 1990; Ghani et al 1991; Trevino and Webster, 1992; Webster, Trevino, and Ryan, 1993). Flow has been described as "the process of optimal experience" (Csikszentmihalyi 1975; Csikszentmihalyi and LeFevre, 1989) achieved when sufficiently motivated user perceives a balance between their skills and challenges of the interaction, together with focused attention (Hoffman and Novak, 1996). The concept of flow is important because it has a clear set of antecedent conditions and consequences that have implications for Web-based e-services. User's information experience on a website, its impact, retention of that web-based e-service experience and a return visit can be related to the flow concept. For the flow state to be experienced the user must perceive skills and challenges to be in balance and above a critical threshold and the user must be paying attention. Hoffman and Novak (1996) suggest that the consequences of flow in computer mediated environments relates to increased learning, increased exploratory and participatory behaviours, and more positive subjective experiences, that a critical objective of a commercial website is to facilitate the flow experience. Karahanna et al. (1999) suggest that user's acquire personal experience and their own source of evaluative information in using the information system. Such an experience can have a strong impact on the user in remembering their experience on that particular website.

This study assumes that end-user's experience with information already exists in the traditional environment (i.e., offline). Understanding the traditional service complexities of user experience with information and transforming it to the online environment is a challenge for both practitioners and researchers. The dimension and scale of such complexity in terms of technology and its alliance with information may provide an integration point where technology requirements may meet with the user's experience. Defining user experience with information is not an easy and straightforward process. Rather developing an approach to studying the experience process on the basis of web-based e-service and user interaction is suggested. This paper specifically investigates issues related to end-user information experiences in web-based e-service adoption and the process involving successive usage and continuation of web-based e-services. With technology constantly changing it will subsequently have an effect on the user's information experience and perception.

User's engaged in web-based e-service activities tend to focus on prior information experience and perception, especially from the offline environment. The effect of information experience in web-based e-service on first time user's compared to the frequent user's will vary, a user with no experience can form high (or low) perception, especially via word of mouth communications. Such perceptions may behave differently from those developed via experience. As Davidow and Uttal (1989:85) suggest: "service expectations are formed by many uncontrollable factors, from the experience of customers…to a customer's psychological state at the time of service delivery." It may also be suggested that a user information experience is formed and based on wider range of prior experiences that may be recalled or narrowed in a similar situation. The flow of

information over the Internet is faster and communication between user's leads in exchanging experiences in short time. Understanding such user's experience and perception solely on the basis of online or offline experience would tend to limit the research dimension; rather a combination approach is adopted.

2. Methodology

The research objective is to investigate the adoption of web-based e-services amongst end-users. In the first instance discussions were held with three senior staff members involved in implementing the web-based e-service. This comprised of executive director, IT Manager, and consultant. In the second round individual interviews were conducted with these participants. The third round of interviews was conducted with the admissions manager and separate interviews with two other staff members. Altogether six interviews with participants were held. Though the participant's gender was not a major factor for attention, it included three males and three females. The first round interviews the data collected were compared with the second round and third round interview data, for consistency, clarity and accuracy of the information. Interview data were also compared to test for the factors having effect on users with high and low performance in using the system. This provided the advantage of not duplicating the data with just one set of evidence. The discussions and interviews were open-ended (Yin, 1994), the researcher in the beginning provided the topic, and the respondents were probed of their opinion about the events. The questions were open ended and were directed towards user's information experience with the web-based system. The questions were directed to the users in reflecting their recent experiences with the system and demonstrating its effectiveness in the web-based task. It provided the opportunity of capturing rich information that was fresh and part of the user interface within the system. It not only provided information about the user's experience, but also demonstrated the boundaries of the web-based system, in other words the scope of the system in doing the task was clearly reflected from the data the user's provided to what the system was capable of doing within the parameters. This approach took into consideration the users and the system context in understanding the situation. It provided information from the user's perspective in the terms of the user's perceptions towards the system.

3. The Case Study

The case study examines the web-based e-service framework of the University of Australia (not the real name). International students have the option to lodge an admission application through either of: web-based e-service on the Internet, phone, fax, or in person. On receiving the application a decision is made by the staff on the admission status. Within this process the department is implementing an electronic delivery of its services on the website. Web-based e-service has been in use for the last two and half years. The complete process involves students making the application and the staff processing applications on the website. The staff is currently using the web-based e-service and the paper-based system in conducting the tasks. Transition from paper-based to web-based e-service is believed by the department to be a significant step in the direction of moving the complete student admission process over the website and gradually removing the paper-based system. The users experience with information in adopting the web-based system was focus of attention in the study.

4. Evaluating User's Information Experience

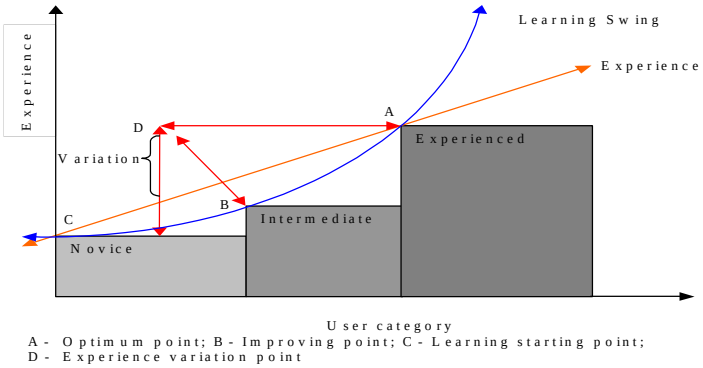
The user perception of web electronic service was a burden and acted as a barrier to their work. It increased the workload, slowed the work process, and brought in complexity to the task. The department did not implement electronic services or introduce technology into jobs at the same time. The effect on user experience in using the e-service was not estimated when the system was being developed. Understanding the task sequence from start to finish, and integrating those functions into web-based e-services was missing. It lacked coherence. Individual users may not have consistent skills in using the e-services because of differing levels of expertise (i.e., user category). Specific expertise needed for conducting the task was lacking. Different task requires different skills when done on paper, doing it electronically requires different experience with information and knowing what was happening beyond the user's computer screen. In the paper-based system, it was known to the user how different process of a task and where information was stored and retained when needed, such as the filing, organizing, storing of documentation was systematically interconnected, in case of electronic service little was known by way what constituted as web-based e-service task process beyond the computer screen. Proper documentation providing information to the user's for referencing were either missing or unknown. One participant mentioned:

"User's had no confidence in the system and decision making."

The users were asked to enter all information directly to the web. To expect a user to start using an electronic service without prior understanding the user's experience was not perceive to be appropriate. Despite providing regular training the user resistance to use the electronic system increased. The following quote support this notion:

"There are quite a few fields where we can't use the web-based e-services."

Martin, (1991) suggest that user experience evolves, or ranges, from naïve (no system knowledge) through inexperienced to competent and finally to expert. On such basis user's can be divided into following categories: novice, intermediate, and experienced. It is important to remember that different categories of user's experience vary at different stages in performing the task. It is anticipated the user's are in a learning process and shift from one mode to another, with experience sliding up or down on the learning swing and the user experience varies, till they reach a point (see Figure 1, point A) where the information experience flow is at the optimum level in doing the task.



Sandhu and Corbitt (2002)
Figure1: Learning-Experience Swing

The assimilation and dissimulation of information experience in conducting the web-based e-service task may provide the user an option in retaining that experience which can be remembered easily. A participant claimed:

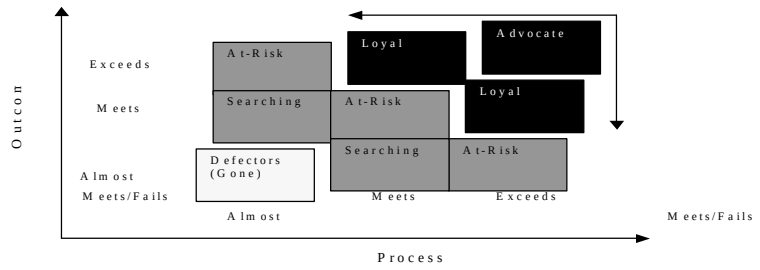
"Need to rely on paper documents and another database to complete the task… have to use all…"

The information disclosed by the participant point to the fact that the web-based system was short from offering the user a learning process which if available would have gradually build on user's prior information experience, rather the user's were juggling with multiple sources to collect the information that was needed in completing the web-based task.

The experience attained in online or offline environment is likely to direct the user in retaining the most recent experience because this would be much easier to recall, provided that the information is relevant to the current context. Zemke and Connellan (2001) posit that each service experience, regardless of whether it's online or offline, sets the stage of expectations for future service interactions. The user tends to focus on ease of use (more than the usefulness), familiarity, skills needed, website-to-website e-service comparison, and on the task complexity. The task complexities can be defined in terms of e-service navigation on the website, information search, transaction processing, and online support (i.e., help). A participant related this in terms of the web-based system as:

"System is not intelligent to check simple errors like spell checks, grammar checks…"

The statement referred to the user's expectation of the systems capabilities in terms of their prior experience. The user's had used this functionality in another system and expected to match with their prior information experience in the web-based system. The user's perceived experience about the current system being below its standard and not helpful in doing the task. It did not meet the user's information requirement for the task.



[Adapted from Zemke and Connellan (2001)]
Figure 2: User Experience Grid

Zemke and Connellan (2001) developed a model (Customer Experience Grid, see Figure 2) to capture the sum total of a user experiences. The vertical axis of the user experience grid is the outcome the user receives, which the core e-service is offering on a website. On the horizontal axis the user's goes through the process to obtain the e-service outcome, such as navigating the website, printing out information, looking for pricing, ordering a product etc. Similar service outcomes when compared are available on other website or in an offline environment in user transaction process. Zemke and Connellan (2001) argue that the process – the way they are served – is what makes it memorable, positively or negatively for users. If the user's needs are not met on the process and outcome axes, they tend to go elsewhere, and hence called defectors. Similarly if the user's needs are met on one dimension and unmet on another, they are actively searching for an alternative on another website or in offline environment to replace the service provider. This was supported in our study; the participants reported switching to the paper-based system, which was considered as an alternative to e-services. The authors suggest that to succeed on the website, it is important to consistently manage the total user experience (i.e. information experience) in the categories in upper three (black) boxes (see Figure 2). They claim to have successfully used the model at Dell Computers in understanding the total user's interaction. However, there is no quantitative data and analysis of the model that suggest how well the model works across heterogeneous web-based e-services / products.

The user's interaction in computer mediated environment is an intense flow being a continuous variable ranging from none to intense (Day, 1981; Ellis, 1973; Berthon et al., 1999), the user's purpose of visit to the website may be perceived as more encouraging of exploratory behaviors than others (Trevino and Webster, 1992). If the website meets the primary information need of the user, it may positively affect the user in further progressing with the activity leading to a state of intense flow. It is likely that user's developing a high flow will visit those websites more regularly and for longer duration (Berthon et al., 1996). The state of intense flow was either missing or faced obstacles. The users weren't able to proceed with the task in the electronic environment. User may tend to reflect on the past experience for future interaction. A participant reflected this in a statement:

"The system is not 100% ready…""Adds on to the task…increases our task load."

It was believed that the users were loosing interest in the web-based system due to continuously being put down. To retain interest in a site, there should be enjoyment on the part of the user during the interaction of the site. A participant statement highlights this concern:

"If the system can be fixed it can be fixed, otherwise we will continue using it as it is."

It was known to the users that if the web-based e-service didn't work they could depend on an alternative system (i.e., paper-bases system) in doing the task. The shifting of information experience between the paper-based and web-based emerged as a continuum on which the user viewed the web-based system effectiveness before proceeding with the task, which was based on an understanding from past experience. If the user felt the task could be (not only) performed and also completed they went ahead with the web-based e-service; otherwise they opted for the paper-based system. Any adverse feelings were filtered towards the web-based system at that time affecting the decision making to use the web-based system. Those claims were supported by participant statements:

"Verifying information on the Internet is not possible; we still have to check student's education credential in paper form"

"Site needs to be improved with better features and functionality that will make it easier for us to use."

In the flow state, the user's focus or attention is narrowed to a limited stimulus field, and irrelevant thoughts are filtered out. Csikszentmihalyi (1975) suggest that in a flow state the person becomes absorbed in the activity, while increasing his awareness of his own mental processes in the interaction with the web, the computer screen can serve as the limited stimulus field, focusing the individual's attention (Webster et al., 1993). The user faced hurdles during the flow state affecting their attention while doing the task. A participant expressed this:

"Due to time out period that disconnect, the user has to reenter all the information once again…this creates duplicity of information for us...as the same user is reapplying again and it is hard to differentiate between the same application."

As users become more frequent users of e-services they will place more reliance on information from internal sources (memory) than external sources (advertisements, word of mouth, etc) (Johnson and Mathews, 1997). Many researchers have noted the ways in which memory is biased (Foulkes, 1994). Frequent events are easier to recall than infrequent ones (Hasher and Zacks, 1984). Therefore remembering an event is biased by the availability of information within memory (Johnson and Mathews, 1997). The mechanical process of conducting the e-service task with the available tools on the website forms a basis of interactivity for the user and is similar to recalling frequent and infrequent events. Prior research suggests the application of tools to vary across different users from novice to advance.

The development of intelligent agents guiding the user in conducting the task from start to completion tends to improve the user interface and reduce uncertainty and problematic experience. This has led to smart software taking over the task, reducing and limiting user's interactivity with the task, and completion of task within a few ticks and clicks of a mouse. The

whole process tends to be reduced, removing the intricacies the user can encounter, and at the same time standardizing the e-service across all domain and user developing a positive experience. The intelligent agent capability in storing and remembering user's transaction details, and displaying on revisits has also reduced the user's need to keep paper record of transaction, making it easier for the user in conducting the e-service task with the availability of past, current and future information records available online. This has an effect on the user experience in using the traditional service where the information available is not swift and quick. A reliance on internal search means that the user's memory will have considerable influence on the formation of "expectancies" (Foulkes, 1994:110). Hasher and Zacks (1984) found that the accuracy with which people encode information increases with the frequency of encoding. Although their research focused on consumers' exposure to advertising, a parallel can be drawn with consumers' exposure to e-services. Similarly, Zeithaml et al. (2000) in their study pointed to information gap on the basis of users experience with website that leads to providing incomplete or in accurate information to the users. It is anticipated that the application of intelligent agents in user interactivity will further enhance and integrate into the user experience with information, and become part of the user guidance in conducting e-service task. It was believed that the user interface needed the integration of intelligent agent into the software that lacked in guiding the user in conducting task. A participant directed the claim:

"If any information is missed, there is no way to check, there are no compulsory fields to inform of missing information."

Online firms have found it difficult to obliterate inter-personal interactions completely shows how difficult it is for customers to use e-services (Riel et al., 2001). Meuter et al. (2000) in their study found that 80% of the customer complaints were made in person to the company, either by phone or by visiting a service facility. This suggests that the when the user is effected with a problematic experience online, and to resolve the issue, the user adopts the traditional approach of face-to-face interaction, rather than online approach. Users may evaluate services or other information. The participant in the study evaluated the effectiveness of web-based e-services in their task, and weighted its effectiveness by comparing it to the paper-based service.

"We can't offer admission letters to higher degree research students on the web-based e-service, as letter templates not there; we have to offer it on paper."

The degree of tolerance for web-based e-services may be intense due to the competitor's service being a click away (Zeithaml et al. 2000). The users were quick in changing over to paper-based service, which was believed competing with the web-based e-service. Thus user's tolerance level for e-services, their immediate reactions to the service failure and their consecutive behavior, are interrelated and forms part of the experience and perception the user develops. A participant expressed:

"If the system can be fixed it can be fixed, otherwise we will continue using it as it is."

When the service fails it has fallen outside the user's zone of tolerance (Zeithaml and Parasuraman, 1993). So far nothing is known about user's tolerance levels of e-services, or the user's propensity to complain about online service failures (Riel et al., 2001), and user's reaction to it. Zeithaml et al. (2000) concluded that customers have no e-service expectations, customers

have been found to compare e-service to competitor's services and to brick and mortar stores (Meuter et al., 2000; Szymanski and Hise, 2000). The degree of user's tolerance was not known.

"They are frightened for asking help if needed…rather they ask for help than provide wrong information."

It seemed there were obstacles the user's developed in their experience to use e-service.

5. Conclusion

In line with the preceding discussion it is suggested that web-based e-service end-user adoption takes into account the user experience. Though prior studies even adopted the general technology user models like the TAM model (Davis, 1989; 1993), which is of significance, they do not take into account the user context issues on a commercial situation basis. To study the e-service end-user adoption from a user perspective centered context and combining it with adoption and acceptance models would enhance that understanding. To explore the context further, issues related to situation specific personalization of individual end-user's needs in online and offline environment may be used to produce evaluation guidelines that would facilitate the adoption and continuation process.

User experience to use web-based e-service requires a level of expertise that assist in doing the task. Either the users didn't have expertise or the system was not geared to provide functionalities that could assist the users. The users having to rely constantly on paper-based system complicated the process. The system lacked creditability in detecting simple errors that penetrated into the task. The users could not verify information over the Internet and lead to task duplication. There was low confidence to use the systems due to inadequate features. The user's attitude towards using the system was developed on the basis of these perceptions.

Earlier studies investigated the adoption of e-services in different contexts, but not provide insight into acceptance and continuance of e-service by consumers. Though a consumer may use e-service for the first time, its continuous usage lays the success. Understanding and developing end-user's continuous usage behavior in e-services has illustrated the same perspective and provided similar insights into what determines IS acceptance and continuance. This study has concentrated on those factors and at the same time revealed its core relationship to e-service end-user behavior.

From the preceding discussion it has been clear that web-based e-services end-user adoption is not a simple and straightforward process. Rapid development in technology delivery is gradually shaping the consumer uptake and usage of this new innovation. The level of interaction from traditional services to e-services and simultaneous use of both has laid a new set of implications for the organizations, government, consumers, practitioners, and researchers. In understanding the new set of implications, initial research revealed that though uptake and use of this new innovation has been positive, its acceptance and continuance has been limited. The available research though identifies some main issues it lacks in understanding the impact of the critical success factors. Further research will attempt to explore a more structured understanding to web-based e-service end-user adoption within a referenced theoretical construct.

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